September 17, 1958

Mr. Timothy Loeb
Rockefeller Institute for Medical Research
New York, New York

Dear Mr. Loeb:

I have only just returned from Europe to find yours of August 22. It was good of you to write.

We are of course continuing our studies of mating behavior in E. coli. It is difficult to project the long term course of our program but I will answer your questions as well as I can at this time.

Dr. P.H.A. Sneath is arriving in a few weeks on a postdoctoral fellowship, the primary object of which is to identify the sexual receptor. We have a number of vague leads, including the persistent reactivity of both males and females as protoplasts, the aeration phenocopy whereby males are temporarily modified into females, and the effect of acridine orange and other dyes in removing the $F^+$ factor. But our immediate plan was to be a straightforward gross analysis of different cellular fractions, especially walls and membranes, to see wherein the sexes differed with respect to any biological or chemical assay.

We have not investigated the temperature coefficient of $F^+$ transfer in any detailed way. (i.e., it does not occur appreciably at temperatures suboptimal for growth.) I am afraid any kinetic studies with F are still rather tedious. We have projected a rather detailed re-examination of the kinetics of various steps of mating of Hfr x $F^-$.

Dr. Orskov at the State Serum Institute in Copenhagen who was here last year is making a detailed immunological study of varius mating types, including their protoplasts.

I would urge you to look at the transfer of $P^{32}$ and $S^{35}$ in $F^+$ x $F^-$, which Skaar and Garen never got around to do, and we do not immediately contemplate. You probably should consult them for their plans however. We do have in mind applying "star" technique to the question of DNA transfer in Hfr x $F^-$ and if this worked out the $F^+$ case would be a logical next step.

There are no unpublished theses here on F transfer. You may be thinking of some work that Cavalli or Marcacaro has done in Milan.

The strains you mentioned are reasonably standard $F^+$ and $F^-$; we will be happy to furnish anything else that might appear to be more promising for your program as it crystallizes. I can't help but wonder, however, whether your anticipated plunge into another aspect of microbial genetics has been with or against the advice of Dr. Fox. If I were in your shoes, I would want to take advantage of his

accumulated experience with the pneumococcal system, which I envy him myself.

I will be happy to keep in touch with you.

Yours sincerely,

Joshua Lederberg
Professor of Medical Genetics

JL/jp